Effect of Training Program on Symptoms Severity, Bother and Quality of Life among Pregnant Women with Overactive Bladder

Noha Elsayed Mahmoud Radwan [(1)], Mervat Mostafa Abdel Monem Desoky [(2)], and Hanan Morsy Salim Metwally [(3)]

[(1)] Lecturer of Obstetrics and Gynecologic Nursing, Faculty of Nursing, Zagazig University, & [(2, 3)] Assistant Professor of Obstetrics and Gynecologic Nursing, Faculty of Nursing, Zagazig University

Abstract

Background: Over active bladder is an extremely annoying and has a negative effect on pregnant women's quality of life by hurting their ability to function socially, mentally, productively at work, sleep, and sexually. **Aim of the study:** Was to evaluate the effect of training program on symptoms severity, bother and quality of life among pregnant women with overactive bladder. **Subjects and Methods; Research design:** This study used a quasi-experimental design. **Setting:** The research was carried out at the outpatient antenatal clinic at Zagazig University hospitals, Sharkia Governorate, Egypt. **Subjects:** 164 pregnant women were included in a purposive sample; 82 of them were assigned to the intervention group and the remaining 82 to the control group. **Tools of data collection:** Five tools were used; a structured interviewing questionnaire, assessment of pregnant woman's knowledge, overactive bladder symptom score, Overactive Bladder Questionnaire and Healthy Lifestyle Behavior Scale II. **Results:** After the training program, there were statistically significant improvement in pregnant women's knowledge, overactive bladder symptoms severity, bother and quality of life among intervention group compared to that of the control group. Also, there was a statistically significant increase in the intervention group's mean score for healthy lifestyle behaviors. Furthermore, healthy lifestyle behavior was significantly positively correlated with knowledge and quality of life and negatively correlated with overactive bladder symptoms severity and bother. **Conclusion:** The research findings indicated that training program reduced over active bladder symptoms severity, bother and overactive bladder wet among pregnant women, improved their healthy life style behavior and positively affected on the quality of their life. **Recommendations:** Raise awareness of overactive bladder and enhance its treatment in the obstetrics and gynecologic department must be done. Using healthy life style behavior training in conjunction with a holistic strategy to treat women with overactive bladder improved treatment outcomes.

Key words: Bother, Quality of life, Pregnant women, Overactive bladder.

Introduction

Overactive bladder (OAB) is a bladder-centric syndrome marked by nocturia, urge urine incontinence, and frequency of urination. OAB is extremely inconvenient and has a detrimental impact on quality of life by affecting social interaction, mental health, and productivity at work, sleep, and sexuality [(1)]. Due to increased expenses and resource utilization for healthcare, these consequences have a negative financial impact. OAB is uncomfortable and debilitating illness with major consequences for one's health and finances. OAB can be divided into two categories: OAB-wet (with incontinence) and OAB-dry (without incontinence). The lack of a urinary tract infection or any visible underlying disease is a requirement for the diagnosis [(2)].

According to the International Continence Society (ICS), overactive bladder, which is frequently associated by higher daytime urination or nocturia, is a significant urine-related symptom that does not emerge as a result of a urinary tract infection or another diagnosable condition, OAB's pathophysiology is still unknown. The complicated pathophysiological changes associated with OAB have currently been associated with two primary pathogeneses, neurogenic and myogenic [(3)].

OAB is a major public health burden that is particularly common in the female population. OAB sufferers report a marked decline in their general quality of life. OAB symptoms have been reported by women to have interrupted regular activities, such as staying at home, reducing physical activity, and gaining weight due to inability to exercise [(3)].

The most well-known risk factor for OAB development is likely age. The prevalence rises with age, reaching 30.9% in people over 65. OAB symptoms have been linked to an increase in postmenopausal status in women. Since estrogen plays an important part in controlling the function of the lower urinary tract, it is thought that this connection is connected to lower estrogen levels during menopause. Vaginal estrogen may be used to treat the symptoms of OAB since it has estrogen receptors in the muscles of the pelvic floor, urethra, bladder, and vagina. OAB symptoms during pregnancy are caused by typical physiological changes [4].

The most common risk factors of OAB include being a woman, becoming older, obesity, smoking, and pregnancy, giving birth vaginally or via caesarean section, having chronic or acute UTIs, and having a hysterectomy [5]. Diagnoses of OAB based on symptoms. The urodynamic diagnosis of detrusor over activity (DO) is different from this. DO is characterized by involuntary detrusor contractions that may occur spontaneously or are triggered during the filling phase. Idiopathic detrusor over activity (IDO) and neurogenic detrusor over activity (NDO) are two subtypes of DO. However, OAB patients do not always present with DO [6].

A patient's daily activities, such as job, travel, physical activity, social contacts, sleep, and even sexual function, are impacted by OAB. Women are disproportionately impacted, and they tend to steer clear of activities where urination leaks or a lack of restrooms can become an issue. OAB has a significant impact on women's relationships and quality of life by affecting their mental health and leading to despair, anxiety, shame, and poor sleep [7, 8]. According to studies, almost 25.0% of women have trouble getting arousal, orgasm, and enjoyment during sexual activity. The quality of life of those with more severe OAB symptoms is much reduced [9].

Even though OAB significantly lowers adult populations' quality of life, most patients do not receive professional treatment and suffer from their condition because they are ashamed of it and do not know that it can be treated or that they should just accept it as a part of daily life. When this happens, patients suffer from OAB-related pain. People with OAB symptoms frequently put off getting help or even talking to their doctors about their concerns. Patients' motivation to seek treatment appears to be heightened symptom severity or discomfort [10].

Avoiding invasive treatments like surgery or other invasive procedures is referred to as "conservative management" in medicine. This sort of treatment is typically used to maintain function or bodily parts. Utilizing nonsurgical treatment alternatives such as medical treatment, physical therapy, and other therapies is a technique known as conservative management. Lifestyle measures, behavioral changes, electrical stimulation (ES), biofeedback therapy (BT), and pelvic floor muscle training (PFMT) are the initial treatments for OAB. When symptoms are minor or treatable, a conservative approach is frequently justified [11]. In order to inform the patient about her condition and giving her strategies to reduce symptoms, a class of treatments known as behavioral modification aims to improve bladder patterns or teach new abilities in order to reduce the symptoms of OAB: bladder retraining, fluid management, prompting, timing, and elimination of bladder irritants [12].

A behavioral therapy strategy is one that aims to change the person's behavior or surroundings in order to enhance bladder control. Urinary incontinence, urgency, frequency, and nocturia are examples of symptoms that can be mitigated or reduced by altering a patient's behavior, surroundings, or lifestyle. The lifestyle adjustments include quitting smoking, losing weight, removing bladder-irritating foods, drinking enough water, controlling one's bowel movements, quitting smoking, and adapting to physical stressors [5].

A healthy lifestyle is described as the management of all behaviors that may have an impact on a person's health and the selection of behaviors appropriate to that person's health state when planning daily activities. Evaluations of dietary practices, self-actualization, health responsibility, exercise routines, interpersonal support, and stress management are all considered components of a healthy lifestyle [1].

Nurses advise patients with lower urinary tract symptoms (LUTS) seeking treatment to alter daily routines to lessen symptoms. LUTS

may be impacted by diet, fluid intake, caffeine, alcohol, and tobacco use. Because of their social roles, nurses have the potential to affect the populations to which they offer healthcare through their professional responsibilities and way of life. As a result, nurses are heavily involved in initiatives that improve health [13].

Significance of the study:

With a highly prevalence of 10.8% and 12.8% for men and women over the age of 18 years old, respectively, overactive bladder (OAB) is a phenomenon recognized by urine urgency, frequency and nocturia. The actual impact of OAB on a person's quality of life is more harmful, and those who exhibit OAB symptoms are more likely to withdraw from interpersonal connections and social interactions [10]. The primary line for overactive bladder symptoms treatment is lifestyle behavior change, which includes fluid therapy, pelvic floor strengthening exercises, bladder training, and bladder control techniques. Although an intervention program is a crucial for symptom reduction and quality of life enhancement in OAB patients, there is an insufficient data to support its effectiveness and no assessment or intervention study done by nurses in Egypt about pregnant women with overactive bladder.

Aim of the study:

The aim of the study was to evaluate the effect of training program on symptoms severity, bother and quality of life among pregnant women with overactive bladder.

Research Hypothesis:

H1: Pregnant women who participate in the training program will have more knowledge than those who do not participate in it.

H2: The training program will improve the severity of overactive bladder symptoms in pregnant women compared to those who do not get it.

H3: Pregnant women who engage in the training program will experience less overactive bladder bother than those who do not engage in it.

H4: Quality of life among pregnant women with over active bladder will be improved after the training program than those who do not receive it.

Subjects and Methods:

Research Design:

A quasi-experimental design (pretest and posttest) in intervention and control group was used in this work to explore the present research topic.

Study setting:

The study was carried out at the Zagazig University hospitals' outpatient antenatal clinic in the Sharkia Governorate, Egypt. This setting was selected because it was the main hospital where pregnant women could get prenatal care. The outpatient prenatal clinic is found in the second floor. The assistant nurse has a tiny room, while the main room is fitted with everything needed for exams. This unit is available daily between 9:00 am and 2:00 pm and is located next to the gynecological unit.

Study Subjects:

Sample type:

164 pregnant women with overactive bladder syndrome were included in a purposive sample, of whom 82 belonged to the intervention group and another 82 were the control group.

Sample size:

Study was done by **Cayir and Beji [5]** found that Mean ± Sd of King's Health score in post a counseling and training program on the treatment of women with overactive bladder was (204.2±147.2) and (289.2± 186.26) in control group. With confidence level was 95.0% two side with power of study 90.0%. Sample size calculated using Open Epi, was 82 pregnant women in each group.

Subjects:

164 pregnant women who diagnosed with OAB syndrome by a doctor were included in the research sample. The first 82 pregnant women who got routine care were included in the control group, and next 82 pregnant women were included in the intervention group, which received the intervention program in the previously indicated setting, based on the following criteria:

Inclusion criteria:

- Women in any trimester of pregnancy.
- Being over the age of 18.

Exclusion criteria: Pregnant women with any of the following;

- Diabetes mellitus.
- Pelvic organ prolapse.
- Exhibited signs of miscarriage.

- Urinary tract infection.

Tools of data collection: In order to accomplish the aim of the current study, the researchers utilized five tools.

Tool I: A structured Interviewing questionnaire: The researchers created it in a simple Arabic in order to gather the information required to accomplish the aim of the study. There were two parts to it:

Part I: Demographic characteristics: It composed of six questions as age, level of education, residence…etc.

Part II: Previous and current Obstetric history as number of parity, gravidity, gestational age per weeks, mode of last delivery… etc.

Tool II: Assessment of pregnant woman's knowledge: It was developed by the researchers in a simple Arabic language to assess pregnant women's knowledge after being adopted from **Chen et al. [3]**, **and Cayir & Beji [5]**. It is divided into the following three parts:

Part I: Assessment of pregnant women's knowledge about anatomy of urinary system: It includes 9 questions as composition, function of urinary system…etc.

Part II: Assessment of pregnant women's knowledge related to Physiological changes of urinary system during pregnancy: It includes 5 questions about the effect of pregnancy on urinary system as frequency of micturition, urinary stress incontinence…etc.

Part III: Assessment of pregnant women's knowledge regarding OAB: It used to assess the knowledge of pregnant women about OAB. It includes 44 questions about the 9 main items of OAB as causes, symptoms, investigations of OAB…etc. The total questions used in tool II was 58 questions used to assess knowledge of pregnant women prior to the intervention (pre-test) and at the end the third month (posttest).

Scoring system of OAB knowledge (Tool II):

The range of the total knowledge score was 0 to 58. The yes, no, and don't know response formats were used to evaluate the OAB knowledge items. A positive response received one point, but a "don't know" or no response received zero points. The overall knowledge scores for each pregnant woman were totaled and reported as a percentage of the total corrected knowledge to calculate the knowledge score percent. Thus, based on statistical analysis, the overall knowledge score percentage has been divided into the following two categories:

- Unsatisfactory knowledge < 60%.
- Satisfactory knowledge ≥ 60%.

Tool III: Overactive Bladder Symptom Score (OABSS): It had four questions used to assess OAB symptoms. The Taiwanese Continence Society validated the questionnaire in the Chinese population by **Hung et al. [14]** after it was first created **[15]**.

Scoring system of OABSS (Tool III):

The pregnant women were asked to circle the score on this tool that most accurately described their urinary state throughout the previous week. Each question in tool III had different responses; the first question had three frequency responses; ≤ 7 (took score 0), 8-14 (took score 1), and ≥ 15 (took score 2). The second question took frequency responses had 0, 1, 2, and ≥3 and they took scores 0, 1, 2, and 3 respectively. The frequency response to question three was not at all (score=0), less than once a week (score=1), once a week or more (score=2), about once a day (score=3), 2-4 times a day (score=4), 5 times a day or more (score=5). Fourth question frequency responses were not at all (score=0), less than once a week (score=1), once a week or more (score=2), about once a day 3 (score=3), 2-4 times a day (score=4), and 5 times a day or more (score=5).

Total OABSS is the sum of four symptom scores: daytime frequency (score 0-2), nighttime frequency (score 0-3), urgency (score 0-5), and urgency incontinence (score 0-5). The total score ranges from 0 to 15. Categories of OAB for pregnant woman were identified as mild (total score ≤ 5), moderate (scoring 6-11), and severe (score ≥ 12). Pregnant women with OAB who scored > 1 on the urge UI questions were classified as having OAB with UI; nonetheless, OAB dry indicates OAB without UI, whereas OAB wet means OAB with UI.

Tool IV: Overactive Bladder Questionnaire (OAB-q): Was developed by **Coyne et al. [16]**. It is a multifaceted tool designed to assess

how patients with OAB perceive their symptom bother (PPBC) and how it affects their health-related quality of life (HRQL). The OAB-q consists of an 8-item Symptom Bother measure and a 25-item HRQL assess encompassing 4 domains: Coping, worry, sleep, and social interaction. In the OAB-q SF, the 8-item scale of the OAB-q was trimmed down to 6 items, and the 25-item scale was trimmed down to 13 items.

A. **OAB bother (The Patient Perception of Bladder Condition (PPBC) questionnaire:** This questionnaire was intended to find out how much certain bladder symptoms had disturbed the pregnant woman during the previous four weeks. **It includes six items as**

   1. An uncomfortable urge to urinate?
   2. A sudden urge to urinate with little or no warning? ... etc.

Scoring system of OAB bother (The Patient Perception of Bladder Condition (PPBC) questionnaire:

There was no right or wrong answer in PPBC questionnaire. 6-PPBC item response options includes; 1= not at all, 2= a little bit, 3= somewhat, 4= quite a bit, 5= a great deal, and 6= a very great deal. Utilizing the following formula, build a summed score from the preceding factors to determine the symptom bother score:

Transformation for Symptom Severity raw score = (Actual raw score - lowest possible raw score) / (Possible raw score range) × 100. Lowest and highest possible raw scores were 6, 36 respectively, and possible raw score range was 30. This will yield scores for symptom bother, with higher scores denoting more severe symptoms bother and lower scores denoting less symptoms bother.

B. **OAB-specific QoL** was employed to evaluate the impact of OAB symptoms on the quality of life. The three QoL domains that make up the OAB-q SF are coping, sleep, and emotional/social interaction.

Scoring system of OAB-specific QoL:

13-OAB-specific QoL item response options includes; 1= none of the time, 2= a little of the time, 3= some of the time, 4= a good bit of the time, 5= most of the time, and 6= all of the time. A 0-to 100-point scale was used to convert all scale results, with lower scores denoting more effect or worse quality of life. For the three HRQL subscales (social, sleep, and coping), calculate the total of the items on each subscale.

Formula for transformation of HRQL raw scores = (Highest possible score - Actual raw score) / (Possible raw score range) × 100. Lowest and highest possible raw scores were 13, 78 respectively and possible raw score range was 65. Higher scores will be indicative of better HRQL.

Tool V: Healthy Lifestyle Behavior Scale II (HLBS-II): This tool covers questions about pregnant women's present behaviors and way of life. **Walker et al., [17]** created the initial version of the HLBS, which was then refined and renamed the "Healthy Lifestyle Behavior Scale II" by **Walker et al. [18]** in 1996. The scale assesses a person's health-promoting habits in connection to leading a healthy lifestyle. The Turkish validity and reliability study carried out by **Bahar et al. [19]** for the HLBS-II scale.

HLBS-II subscale:

1. **Health responsibility:** It contains nine questions about pregnant women's feelings of active responsibility for their own well-being, such as: Reporting OAB symptoms, discussing health concerns about OAB with health personnel…etc.
2. **Physical activity:** It includes 8 questions about pregnant woman regular practice of exercises as performing pelvic floor muscle exercises regularly, bladder training…etc. It is scheduled and executed as a normal part of life.
3. **Nutrition:** It has 9 questions on how pregnant women should choose, arrange, and consume meals as a fluid intake, and how to minimize the intake of bladder irritants like coffee …etc.
4. **Spiritual development:** It emphasizes the development of internal resources. Transcendence and relationships can lead to development. It includes 9 elements as talking about her concerns with people close to her...etc.
5. **Interpersonal relationships**: It has nine questions on communication, which include exchanging ideas and emotions

both orally and nonverbally as well as starting the day by setting intentions.

6. **Stress management:** It consists of nine questions that assess how well a pregnant woman can is the ability for an individual to recognize and use physiological and psychological resources in order to lessen or successfully moderate her tension as talking about her concerns with people close to her…etc.

Scoring system of Tool V: Healthy Lifestyle Behavior Scale II (HLBS-II):

The HLBS-II scale consists of 52 items and 6 subscales, which are scored using a 4-point Likert scale (never=1, sometimes=2, frequently=3, and regularly=4). It consists of 52 items divided into six subscales: Physical activity, nutrition, spiritual growth, interpersonal relationships, health responsibility, and stress management. The total scores of the pregnant woman vary from 52 to 208. Higher scores indicate that healthy practices are being practiced well.

Content Validity and Reliability:

The five tools and the training program were assessed for thoroughness by a panel of three expert professors from Zagazig University's faculty of nursing (two professors of obstetrics and gynecological nursing, one professor of psychiatric nursing), as well as one specialist from the faculty of medicine who specialized in urology and one in obstetrics and gynecologic medicine. The contributions' appropriateness and readability were assessed as well. The group of experts evaluated the validity of the tools in terms of both their contents and appearance. A few sentences and a few elements were changed, together with other minor but required modifications. Cronbach's alpha is used to assess the study tools' reliability. Its values were 0.733, 0.742, 0.881, 0.821and 0.754 for knowledge, OABSS, bother, QoL and Healthy Lifestyle Behavior Scale II (HLSB-II) respectively.

Pilot study:

The pilot study was involved 16 pregnant women with OAB was conducted on 10.0% of the overall study sample size that met the initial criteria. They were excluded from the research. The most important goals of it were to determine the amount of time required for each form and evaluate the forms' readability, feasibility, implementation, item counts, and item arrangements.

Field work:

The researchers met the pregnant women who matched the eligibility requirements and were willing to participate in the study when they attended the previously described study location. The pregnant women were introduced to the researchers and informed of the purpose of the study. After that, they gave their verbal agreement to have their cooperation. After the women's completed their checkup and follow up visits at the prenatal clinic, they were met 3 days per week (Saturday, Monday, and Wednesday) by the researchers where these days were defined for pregnant women follow up from 9:00 am to 1 pm. The current study was conducted from the first of November, 2022 to the end of April, 2023, for a total of six months for data collection. In order to achieve the study's goal, the following stages were chosen and completed:

1. Preparatory stage:

In order to obtain a comprehensive theoretical realize of all elements of the problem, the researchers examined the recent and historical literature that was relevant to the study topic during this phase. For this, the researchers reviewed books, journals, textbooks, web sources from scientific publications, newspapers, and magazines. Subsequently, the development of study tool and training program sessions were completed. It was in Arabic language and covers the theoretical components, training for healthy lifestyle behaviors, and bladder training for managing overactive bladder.

Pregnant women who were not enrolled in the training program made up the control group, and who received only prescribed anticholinergic medications by physician until their regular checkup day. Besides of receiving the pharmaceutical drug, the intervention group had individual interviews with the researchers in the previously stated setting and they received the training program through 60-minute presentation during the training program sessions.

2. Assessment stage:

Following an explanation of the research objectives, each pregnant woman in the intervention and control groups was requested to finish the pretest study tools. They were

given individually to each woman. It took an average of 10 to 15 minutes to complete and once the study was put into action, the same tools were used for the post evaluation (three months later). The researchers used telephone and social media as a method of communications to ensure women compliance to the study from the time of the first interview until time of evaluation. Any explanation or any questions they needed during the three months from the first interview were answered by the researchers.

3. Planning and Implementation stage:

The researchers used the findings from the assessment phase and a review of the literature to construct the training program sessions' content as a colored lecture (power point). The objectives of the training program sessions were determined by taking into account the identified needs, requirements, and gaps in knowledge, healthy lifestyle behaviors and bladder training.

Description of the training program: The main goal and objectives of it were set throughout the study's first stages of development. These objectives were established after analyzing the needs of the pregnant women. Also these were arranged down into a number of objectives, and the assignments were then organized in an order that reflected the training program. It was intended for the study to be presented in four sessions. The objectives of the guide booklet were developed based on the needs of the research participants and an assessment of the pertinent literature. The information in the booklet was created to be distributed to each pregnant woman independently.

General objective of the training program was to evaluate the effect of training program on symptoms severity, bother and quality of life among pregnant women with overactive bladder.

Specific objectives: After completing the training program, pregnant women will be able to:

- Determine anatomy of female urinary system.
- Recognize Physiological changes of urinary system during pregnancy.
- Define overactive bladder.
- List types of overactive bladder.
- Identify risk factors and causes of OAB.
- Identify symptoms and investigations of OAB.
- List complications and treatment of OAB.
- Recognize the effects of OAB on bother and health related quality of life.
- Perform pelvic floor muscle training.
- Practice bladder training technique.
- Acquire a healthy life style behavior to manage OAB.

There were two main parts to the training program:

The theoretical part addressed the fundamental knowledge of three main parts; anatomy of female urinary system, physiological changes of urinary system during pregnancy and OAB. Session one and two covered this theoretical part.

The practical part addressed behavioral training strategies and a healthy lifestyle training for controlling urinary symptoms and enhancing bladder health as habit changes, training techniques, Multicomponent behavioral training. Session three, four and five covered this practical part.

The training program sessions were as follows:

Session 1: Anatomy of female urinary system, physiological changes of urinary system during pregnancy and definition, types, risk factors of OAB were discussed in the first session.

Session 2: It covered causes, symptoms, complications and treatment of OAB.

Session 3: It emphasized habit changes for bladder health promotion and symptom management. Lifestyle modification (adapting the fluid intake, cessation of passive smoking, adjusting diet to eradicate potential bladder irritants, regulating bowel function to prevent constipation and straining during bowel movement) and timed voiding (the practice of urinating at a set period to prevent symptoms) were all included.

Session 4: It addressed training methods such as bladder training which gradually lengthens the interval between voidings uses relaxation and distraction techniques to do this and urgency control techniques which involve deep breathing and using complex mental tasks (reciting poetry, counting backwards from 100 by 7 s…etc.) to ignore urgency.

Session 5: Multicomponent behavioral training as instruct pregnant woman to not rush

to bathroom in response to urgency and use of pelvic floor muscle (PFM) contractions and delay voiding by using PFM exercises. Also the researchers trained the pregnant women about pelvic floor muscle exercise (daily regimen of pelvic floor muscle contractions to build strength and endurance) and delayed voiding (progressively extending the duration between the first urgency and voiding).

4. Implementation stage:

The Intervention group: The study participants were divided up into eight women in small groups by the researchers. The training program was given to each group for five interactive sessions in three days by a week. The training program sessions for women were provided through lectures and group discussions with the use of audio-visual aids. The first meeting began with an introduction to the study, including the goals, significance of the topics, materials, schedule, and location, in an effort to create the strongest possible connection. Each group had a five sessions. It was separated into theoretical portion which was covered in two sessions and the practical portion covered in three sessions. Time in session 1 and 2 lasting 15 minute but it was 45 minute to complete the remaining sessions. There were a total nearly of 10 groups in the research. During each session, the theoretical and practical portions were explained via a PowerPoint presentation, followed by discussion, demonstrations, and re-demonstrations. Using suitable methods, such as videos, films, and pictures, also helped the training procedures.

Throughout each session, the researchers spoke clearly and simply. At the end of each session, the researchers highlighted and outlined the main points. Before each session started, the researchers asked the pregnant women to emphasize questions related to the previous session's participants to make sure they recalled the instructions and to emphasize any knowledge that had been forgotten or was unclear. The booklet describing the OAB training ideas was delivered to each woman in the hope to stimulate her curiosity, engage her, motivate at-home review, and promote practice and learning. The researchers watched each woman closely to make sure that the instructions were followed exactly. There was an opportunity for training, re-demonstration, and improvement. Eight to ten calls were made to each pregnant woman by the researchers to instruct the pregnant woman about the urinary diary form, keep notes on it throughout the study period and promote the implementation of the training program.

The control group: Only routine hospital treatment had been provided to the control group. The researchers encouraged them to continue taking the medicine as prescribed by their physician.

5. Evaluation stage:

Each pregnant woman participated in two assessments during this phase, the first of which served as baseline data (pre-test) at the start of the study. The second assessment, or posttest, was given three months after the pretest. The same assessment tools (Tools II, III, IV, and V) were used for both the pre- and post-test.

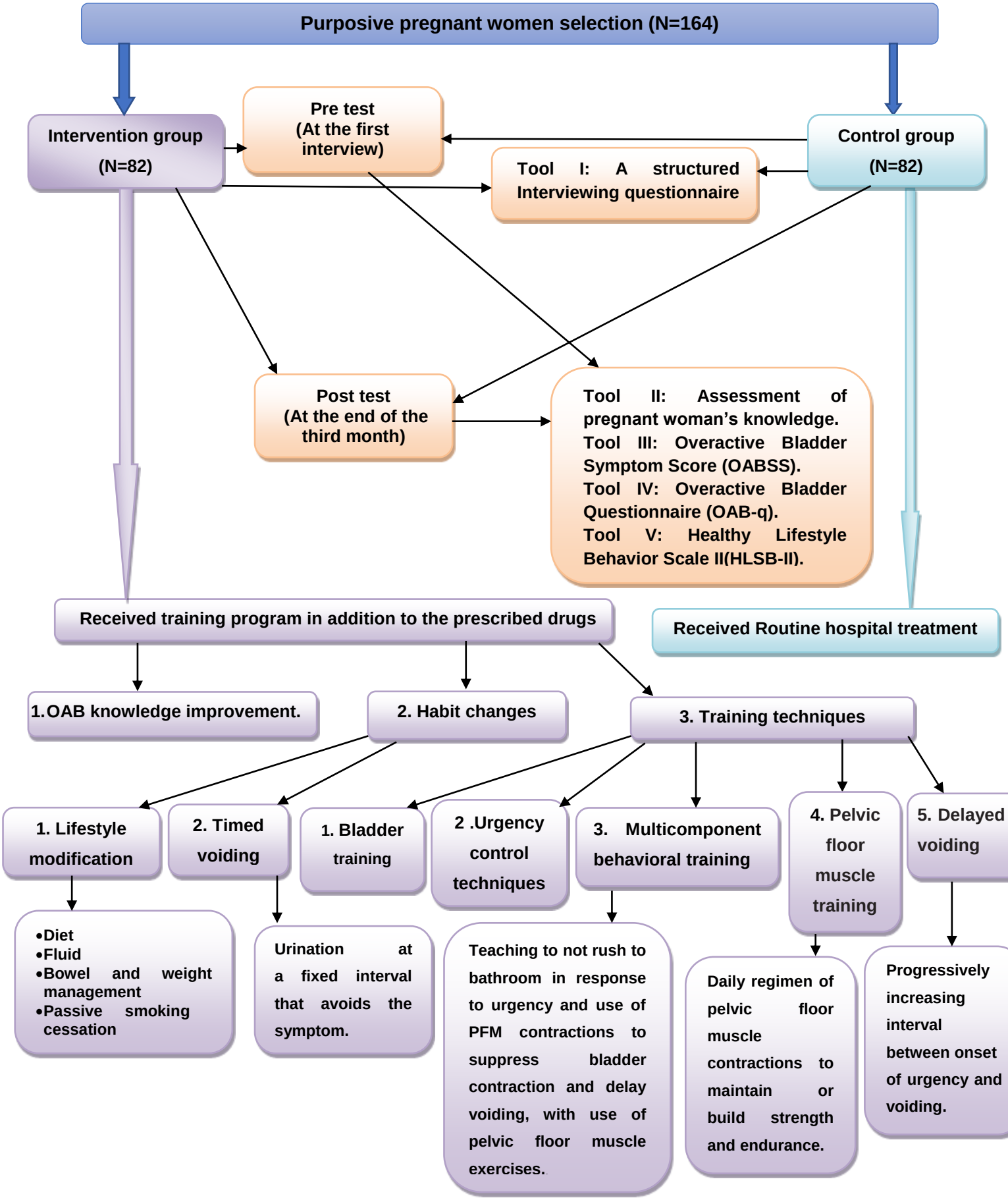

Figure (1): Flow chart of the study process

Administrative and Ethical consideration:

When the Research Ethics Committee (REC) of Zagazig University, Faculty of Nursing accepted the research for the current study by ethical code **(ID/ZU.Nur.REC:0071)**, all ethical considerations were made. To earn each woman's confidence and trust, the goal of the research was explained before any of the tools utilized. When a woman verbally agreed to participate in the study, they were informed that the data collected would be kept confidential and that the processes used in the study would not negatively affect the pregnant women.

Pregnant women were informed of their ability to leave the research whenever they wanted and without giving a reason. This was done by submitting formal requests for permission to the directors of the maternity hospitals and outpatient clinics at the Zagazig University Hospitals. These inquiries came in response to letters from the faculty of nursing describing the objective of the study, the types of tools for collecting data that would be used, and the expected results of its implementation.

Statistical analysis:

SPSS 20.0 for Windows (SPSS Inc., Chicago, IL, USA 2011) was used to gather, tabulate, and statistically analyze all of the data. The mean ± SD was used to convey quantitative data, while absolute frequencies (number) and relative frequencies (%) were used to express qualitative data. When comparing percentages of categorical variables, the Fisher's exact test or the Chi-square test were used. The One Way Analysis of Variance (ANOVA) test was utilized to compare more than two distinct sets of normally distributed quantitative data.

The means of two independent sets of normally distributed quantitative data were compared using the student "t" test. However, the means of two independent sets of non-normally distributed quantitative data were compared using the Mann-Whitney U test. To evaluate the link between the research variables, the Pearson correlation coefficient was determined; a (+) sign denotes direct association and a (-) sign denotes inverse correlation. Step-wise multiple linear regression was also utilized to predict the variables that influence QoL and bother ratings.

The internal consistency of the scales was evaluated by calculating the Cronbach alpha value. Statistical significance was defined as a p-value < 0.05, strong statistical significance as a p-value < 0.001, and statistical non-significant as a p-value > 0.05.

Results:

The study's pregnant women's demographic information is included in **table (1)**. The intervention group had a mean age of 27.51±5.34 years, while the control group had a mean age of 28.46±5.19 years. The two groups' educational levels were comparable with 40.2% and 46.3% of the intervention and control groups respectively, having completed secondary school. The majority of the women in these two groups also had normal BMI and lived in rural areas. No statistically significant differences were found between both groups related to demographic characteristics indicating that they were matched.

According to **table (2)**, the majority of pregnant women in both groups were multigravida. 48.8% of intervention group and 46.3% in the control group were late in their pregnancies. There were no statistically significant differences between the 30.5% and 23.2% of the intervention and control groups who had a history of urinary tract infection. In the control and intervention groups, 34.1% and 25.6%, respectively, stated that they had previously heard about OAB. For over half of the women in both group, the internet served as their primary source of knowledge of OAB. Regarding past and present obstetric history, no statistically significant differences were found between the two groups.

Table (3) demonstrates that throughout the study phases, the mean knowledge score of the intervention group was 6.46±3.30 prior the training program which was improved to 109.65±6.33 after the training program while in the control group; the mean knowledge score was 6.76±3.37 before the training program and 11.12±3.90 after the training program with highly statistical significant differences (p=0.001).

Figure (2) shows that 95.10% and 93.90% of women in the control and intervention groups respectively had unsatisfactory knowledge level before the training program. Satisfactory knowledge was observed in 92.70% of women in intervention group compared to only 8.50% in

the control group after the training program with highly statistical significant difference (p=0.001).

Table (4) indicates that the mean pre-training program total score of women's OAB symptoms in intervention group was 15.00±1.51 which reduced to 12.10±1.66 after implementation of the training program. While in the control group; the mean total score of women's OAB symptoms pre-training program was 14.9±1.35 and 14.97±1.25 after the training program with highly statistically significant differences (p=0.001). There were an improvement in mean symptoms of OAB; daytime frequency, nighttime frequency, urgency and urgency incontinence in intervention group after the training program compared to before it with highly statistically significant differences (p=0.001).

Figure (3) illustrates that more than half of women (53.7%) in the control group and 59.8% of intervention group had a severe degree of OABS symptoms pre the training program. Severe OABS symptoms in intervention group were decreased to 19.5% after the training program.

Table (5) confirms that prior to the training program; OAB-wet conditions were present in 72.0% and 69.5% of the women in the control and intervention groups, respectively, with no statistically significant difference. Following the training program, OAB-dry accounted for 85.4% in intervention group and 23.2% of women in the control group with a highly statistically significant difference (p=0.001).

Table (6) demonstrates that prior to the training program during the middle pregnancy, 44.0% of the intervention group had OAB-dry, and 42.1% of them had OAB-wet. Following the training program, 48.6% of the intervention group experienced OAB-dry during the middle of their pregnancy, compared to just 8.3% who experienced OAB-wet, the difference was highly statistically significant (p=0.001).

Table (7) reveals that the mean score of OAB bother symptoms in intervention group was 64.26±8.21 before the training program which reduced to 32.76±7.19 post the training program. While, the mean score of OAB bother symptoms in the control group was 64.31±8.43 before the training program compared to 65.12±8.82 post it. There was highly statistically significant difference (p=0.001) between both groups after the training program. Furthermore, the mean score OAB-specific QoL in intervention was 30.5±5.2 pre the training program which increased to 78.23±5.14 post it and the mean score of OAB-specific QoL in the control group was 29.2±5.14 before the training program compared to 30.60±4.59 post it, with highly statistically significant difference (p=0.001) between both groups post the training program.

Table (8) indicates that the mean total score of healthy lifestyle behavior pre the training program in the intervention group was 74.5± 4.75 which increased to 121.43±9.04 after the implementation of the training program. While in the control group; the mean total score of healthy lifestyle behavior pre the training program was 73.28±3.92 and 75.17±4.42 after the training program. There was a significant improvement in the mean score of healthy lifestyle behaviors such as health responsibility, physical activity, nutrition, spiritual development, interpersonal relationship, and stress management in the intervention group after the training program compared to before it (p=0.001).

Table (9) reflects a significant negative correlation (p<0.05) between knowledge and OABSS score before the training program. While, after the training program, QoL was significantly positively correlated (p<0.01) with knowledge and healthy lifestyle behavior, and negatively correlated with OABSS and bother. Furthermore, healthy lifestyle behavior was significantly positively correlated (p<0.01) with knowledge and QoL, and negatively correlated with OABSS and bother.

Table (10) shows that bother and OABSS had a negative significant effect (p<0.05) on QoL score. While, life style, knowledge, and education level had a positive significant effect (p<0.05) on QoL score.

Discussion:

Overactive bladder (OAB) is a troublesome disorder that significantly lowers pregnant women's health-related quality of life (HRQL). OAB is a symptom-syndrome, so symptom mitigation is the primary goal of treatment for this condition. OAB treatment compliance is a problem in everyday clinical settings. In pregnant women, about 25.0% stop their treatment when their bothersome symptoms go

away, and another 25.0% stop because the side effects of treatments or unsatisfactory results [20].

To our knowledge, Egypt has never conducted a quantitative study of this topic that examined the relationships between pregnant women's quality of life (QoL), healthy lifestyle behavior, OAB symptom severity, and bother. Most of our hypotheses were supported by our findings. Throughout the study phases, pregnant women's knowledge items scores were higher in the post-training program than before it **(hypothesis 1)**. Before the training program, OAB symptom severity was directly linked to lower QoL levels; after completing the training program, a significant improvement was observed **(hypothesis 2)**, and the mean score of OAB bother symptoms decreased after the training program **(hypothesis 3)**. In addition, following the implementation of the training program, there was an improvement in the mean score of QoL **(hypothesis 4)**.

Regarding hearing about of overactive bladder (OAB) before, our results found that in the control and intervention groups, one third and one forth, respectively, stated that they had previously heard of OAB. For over half of the women in both group, the internet served as their primary source of knowledge of OAB. This contradicts the findings of **Chhatre et al.** [2] in Pennsylvania who found that 98.0% of the participants were aware of OAB treatment choices and that nearly all participants had heard of OAB. The high sample size and ethnicity differences may be the cause of this.

Our finding shows that; throughout the study phases, pregnant women's knowledge of OAB improved statistically significant after the training program than before it (p=0.01). The change in women's lifestyles may be attributable to receiving the proper education, which has improved their knowledge and encouraged their healthy habits. In order to appropriately manage her health, the expectant mother must use of her training and experience. In general, treatment regimen and self-care practices are influenced by a person's attitude, knowledge, resources, and cultural context.

These findings are similar to the study made by **Bourcier and Juras** [6] in Paris who demonstrated that, modifying a patient's behavior, surroundings, or way of life can help to lessen or manage symptoms. Changes in lifestyle are among the interventions: Quitting smoking, losing weight, getting rid of foods that irritate the bladder, drinking enough water, controlling the bowels, and smoking habits. Also, **Lightner et al.** [12] is supported this result.

Our findings show a positive correlation between gestational age and the severity and bother of OAB symptoms. With increasing gestational age, OAB prevalence increased in late pregnancy. This corresponds well with **Chen et al.** [3] study in Taiwan who discovered that the degree of distress, severity of symptom, and prevalence of OAB rise with gestational age with regard to early, middle, and late pregnancy.

Additionally, our findings are consistent with a study conducted in China by **Wang et al.** [21] on the epidemiological trends and risk factors related to lower urinary tract symptoms around childbirth. The study was a one-year prospective study that revealed that the prevalence of LUTS was highest in late pregnancy and significantly decreased after childbirth, with nearly half of the participants urinating three times or more at night during this time.

According to the current study, the mean pre-training program total score of women's OAB symptoms in the intervention group was 15.00±1.51, and after the program was dropped to 12.10±1.66. Statistical significant differences were observed (p=0.01). This aligns with the findings of **Chen et al.** [3], who determined that symptoms were considerably (p<0.001) worse in middle and late pregnancy compared to early pregnancy based on changes in symptom severity and degree of symptom distress in OAB during pregnancy.

There was an improvement in the mean symptoms of OAB, including daytime frequency, nighttime frequency, urgency, and urgency incontinence, with highly statistically significant differences (p=0.01) in the intervention group post-training program compared to pre-training program. These findings are in the same line with **Qudah et al.** [22] in Jordan, they reported that nocturia was the most prevalent symptom among all respondents, followed by urgency, frequency, and urge urinary incontinence (UI).

Our research indicates that, with regard to OAB-dry and OAB-wet during study phases,

women in the intervention group experienced OAB-wet throughout the middle and latter weeks of gestation prior to training program. Women in the intervention group experienced OAB-dryness in the middle and late stages of pregnancy following the training program, with a highly significant difference (p=0.01). With respect to this, the study by **Daly et al.** [23] in Northern Ireland noticed that OAB-wet prevalence was increases in early and middle while OAB-dry prevalence was increase in late pregnancy. This may be because the pregnant woman changed her lifestyle after completing the training program and started exercising, which lessened the severity of her overactive bladder wet.

This contradicts the findings of **Chen et al.** [3] who found that while OAB-dry became significantly less common during late pregnancy, OAB-wet became significantly more common over time. This discrepancy might result from the ways in which we define and measure things differently.

To more accurately follow the progression of OAB's prevalence during pregnancy, our study separated pregnancy into three trimesters. We found that up to middle pregnancy, the prevalence of OAB-dry considerably increases, and then it starts to decline in late pregnancy.

Regarding OAB bother and OAB-specific quality of life with a highly statistically significant difference, the current study discovered that the mean score of OAB bother symptoms in the intervention group was lower post training program than before it. After the training program, the mean score for OAB-specific quality of life was increased significantly (p=0.01). Furthermore, these results aligned with the research conducted by **Qudah et al.** [22] who demonstrated that when OAB severity increased, symptom bother increased significantly and HRQL decreased significantly. While frequency and urge UI showed the highest correlation, there was a significant association found between reduced HRQL and higher symptom bother for all OAB symptoms.

The results of this study indicated a strong inverse relationship (p<0.05) between knowledge and the pre-training program OABSS score. In contrast, QoL was negatively correlated with OABSS and bother, and significantly positively correlated (p<0.01) with knowledge and healthy lifestyle behaviors after the training program. Additionally, there was a significant negative correlation (p<0.01) between healthy lifestyle behavior and OABSS and bother, and a significant positive correlation (p<0.01) with knowledge and QoL.

The quality of life score was significantly impacted negatively (p<0.05) by bother and OABSS. However, there was a positive significant effect (p<0.05) of lifestyle, knowledge, and education on QoL score. These findings are similar to **Qudah et al.** [22] who came to the conclusion that all OAB symptoms had a significant inverse correlation with HRQL and a significant positive correlation with increased symptom bother. Urge UI had the highest correlation (p<0.001) with increased symptom bother, while the highest correlation (p<0.001) was found between decreased HRQL and daytime frequency.

Overall, the study's findings demonstrated that educating expectant mothers about OAB, stressing the value of pelvic floor muscle exercises, and altering their way of life would lessen the intensity of symptoms and bothersome symptoms. This aligns with the research findings of **Bo et al.** [24] who examined the impact of pelvic floor muscle training (PFMT) on pelvic floor muscle function (PFM), patient satisfaction with treatment, adverse effects, adherence, and the quality of exercise reporting in addition to evaluating the treatment's effect on OAB symptoms in females. The PFMT protocols, outcome measures, and follow-up times varied greatly from one another. Five studies using PFMT showed a significant reduction in OAB symptoms along with a decrease in urgency and frequency of urination.

PFMT may lessen OAB symptoms, according to the study findings. It is evident that the skills and knowledge required were taught to women so they could perform bladder training and pelvic floor movement therapy at a level that led to notable variations in the lengthened inter-void interval and strength of the pelvic floor contraction.

Conclusion:

The findings of the current research concluded that: Pregnant women's knowledge improved and healthy lifestyle behavior about OAB were positively changed when the training program was implemented, and this effect was a highly statistically significant. This leads to reducing OAB symptoms severity, increasing the prevalence of OAB-dry and a significant improvement in OAB bother after performing the pelvic floor muscle exercise and bladder training. As well as improving pregnant women's quality of life.

Recommendations:

The following recommendations were offered by the researchers in light of the study's findings:

- Screening for OAB should be taken into account during antenatal visits in order to detect symptoms early and potential changing risk factors to enhance the HRQL.
- Healthcare practitioners can optimize the evaluation and treatment of pregnant women by utilizing reliable and established measures for OAB assessment.
- Imperative to promote effective communication between health care providers and patients. This will increase adherence to treatment and patients' awareness about bladder problems. All this lead to satisfaction of the patient and a higher quality of life.
- Nurses should be competent to advise patients about conservative OAB treatment options.
- Using a healthy life style behavior (HLBS) training in conjunction with a holistic approach to treat women with OAB improved treatment outcomes.
- **Future researches:** More research may be done by doctors and other healthcare professionals to determine the best early pregnancy intervention to lessen the severity of symptoms and the effects of OAB on expectant mothers.

Table (1): Distribution of the studied pregnant women according to their demographic characteristics (n=164)

Demographic Characteristics	Intervention group (n=82)		Control group (n=82)		Test
	No.	%	No.	%	
Age					FET(P= 0.495)
20-<30 years	60	73.2	55	67.1	
30-40 years	22	26.8	27	32.9	
Mean± SD	27.51±5.34		28.46±5.19		
Level of education					
Read and write	12	14.6	6	7.3	$\chi 2$= 3.157
Preparatory school	10	12.3	7	8.6	FET(P= 0.368)
Secondary school	33	40.2	38	46.3	
University	27	32.9	31	37.8	
Residence					FET(P= 0.564)
Urban	15	18.3	19	23.2	
Rural	67	81.7	63	76.8	
Occupation					FET(P = 0.325)
House wife	50	61.0	57	69.5	
working	32	39.0	25	30.5	
Family Income Level					$\chi 2$ =2.954
In dept	2	2.4	6	7.3	FET(P= 0.228)
Just meets their life expenses.	31	37.8	35	42.7	
In sufficient	49	59.8	41	50.0	
BMI					$\chi 2$=0.151
Healthy weight	59	72.0	58	70.7	FET(P =0.927)
Overweight	20	24.4	20	24.4	
Obese	3	3.6	4	4.9	

FET: Fisher exact test. $\chi 2$: Chi square test. Non- significant (p >0.05).

Table (2): Distribution of the studied pregnant women according to their previous and current obstetric history (n=164)

Previous and Current Obstetric History	Intervention group (n=82)		Control group (n=82)		Test
	No.	%	No.	%	
Gravida (times)					
Primigravida	15	18.3	20	24.4	FET(P=0.446)
Multigravida	67	81.7	62	75.6	
No. of parity					
Primi para	20	24.4	24	29.3	FET(P=0 .597)
Multi para	62	75.6	58	70.7	
Gestational age (weeks)					
Early pregnancy	7	8.5	4	4.9	χ2=1.203
Middle pregnancy	35	42.7	40	48.8	FET(P=0 .548)
Late pregnancy	40	48.8	38	46.3	
History of Using Vacuum/Forceps					
No	80	97.6	76	92.7	FET(P= 0.277)
Yes	2	2.4	6	7.3	
History of Urinary tract infection					
No	57	69.5	63	76.8	FET(P= 0.378)
Yes	25	30.5	19	23.2	
Episiotomy of last delivery					
No	47	57.3	56	68.3	
Yes	35	42.7	26	31.7	FET(P= 0.196)
History of last delivery Fetal Macrosomia					
No	81	98.8	79	96.3	FET(P= 0.620)
Yes	1	1.2	3	3.7	
Hearing about of overactive bladder syndrome (OAB) before					
No	61	74.4	54	65.9	FET(P= 0.306)
Yes	21	25.6	28	34.1	
Source of women's information about (OAB)					
Family	3	14.3	4	14.3	χ2=0.084
Friend	6	28.6	7	25.0	FET(P= 0.959)
Internet	12	57.1	17	60.7	

FET: Fisher exact tes.t χ 2: Chi square test. Non-significant (p>0.05)

Table (3): Distribution of the studied pregnant women regarding their total mean scores of knowledge throughout the study phases (n=164)

Knowledge Variables		Intervention group (n=82)	Control group (n=82)	MW	(p-value)
		Mean ±SD	Mean ±SD		
Anatomy of urinary system	**Pre**	3.69±3.037	3.69±3.03	0.001	0.99
	Post	13.51±3.13	3.91±3.05	-19.849^	0.001**
Physiological changes of urinary system during pregnancy	**Pre**	0.78±0.64	0.78±0.64	0.001	0.99
	Post	4.00±0.95	0.78±0.64	-25.242^	0.001**
Definition	**Pre**	0.07±0.26	0.06±0.24	-0.311	0.756
	Post	2.59±0.76	1.13±0.68	12.964^	0.001**
Types	**Pre**	0.08±0.39	0.04±0.26	-0.409	0.683
	Post	5.01±1.40	1.57±0.19	22.048^	0.001**
Risk factors	**Pre**	0.54±0.93	0.45±0.82	-0.501	0.616
	Post	37.53±5.47	2.75±1.01	56.619^	0.001**
Causes	**Pre**	0.13±0.37	0.08±0.28	-0.788	0.431
	Post	11.95±1.94	1.79±0.41	56.619^	0.001**
Symptoms	**Pre**	0.04±0.26	0.03±0.24	-0.447	0.655
	Post	10.13±2.47	4.63±1.74	16.484^	0.001**
Investigations	**Pre**	0.53±1.00	0.47±0.99	-0.644	0.519
	Post	21.34±2.75	4.39±1.53	48.773^	0.001**
Complications	**Pre**	0.27±0.44	0.26±0.43	-0.177	0.860
	Post	2.47±.72	0.99±0.18	18.058^	0.001**
Treatment	**Pre**	0.59±0.91	0.57±0.903	-0.177	0.859
	Post	13.37±1.81	5.82±1.52	28.925^	0.001**
Total	**Pre**	6.46±3.30	6.76±3.37	-.514	0.607
	Post	109.65±6.33	11.12±3.90	120.004^	0.001**

MW: Mann-Whitney U test, ^: student t-test. Statistically non-significant (p>0.05). **: statistically highly significant (p<0.01).

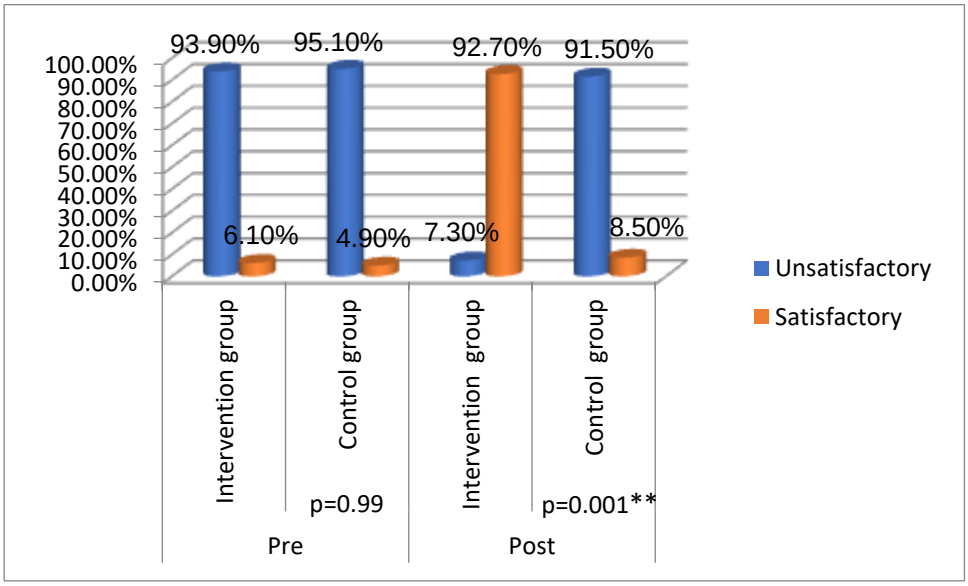

Figure (2): Distribution of the studied pregnant women according to their total knowledge during the different study phases (n=164)

Table (4): Distribution of the studied pregnant women regarding mean scores of their OAB symptoms throughout the study phases (n=164)

OAB Symptoms		Intervention group (n=82)	Control group (n=82)	MW	(p-value)
		Mean ±SD	Mean ±SD		
Daytime frequency	**Pre**	1.85± 0.631	1.89± 0.52	-0.510	0.610
	Post	1.46±0.61	1.93±0.51	5.240^	0.001**
Nighttime frequency	**Pre**	3.12± 0.67	3.09± 0.57	-0.460	0.646
	Post	2.72±0.74	3.12±0.53	3.997^	0.001**
Urgency	**Pre**	4.95± 0.64	4.96± 0.59	-0.142	0.887
	Post	3.95± 0.91	4.91±0.59	8.005^	0.001**
Urgency incontinence	**Pre**	5.07± 0.69	5.00± 0.58	-0.759	0.448
	Post	3.98±1.00	5.01±0.59	8.021^	0.001**
Total	**Pre**	15.00± 1.51	14.9± 1.35	-0.480	0.631
	Post	12.10±1.66	14.97±1.25	12.450^	0.001**

MW: Mann-Whitney Utest, ^: student t-test, statistically non-significant (p>0.05), **: statistically highly significant (p<0.01).

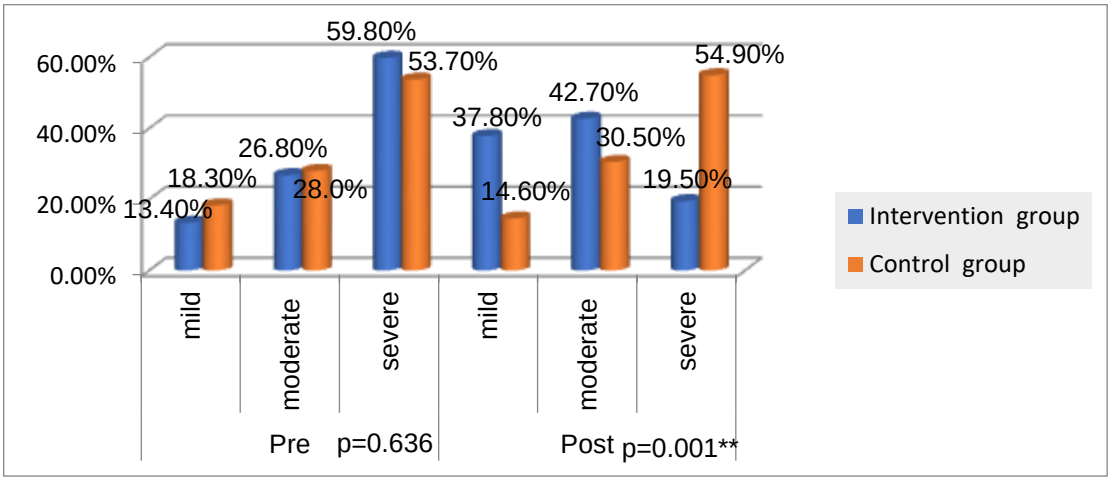

Figure (3): Distribution of the studied pregnant women regarding the degree of OABSS throughout the study phases (n=164)

Table (5): Distribution of the studied pregnant women according to OAB-dry and OAB-wet throughout study phases (n=164)

Groups	Pre				FET (p-value)	Post				FET (p-value)
	OAB- Dry		OAB- Wet			OAB- Dry		OAB- Wet		
	No	%	No	%		No	%	No	%	
Intervention	25	30.5	57	69.5	0.864	70	85.4	12	14.6	0.001**
Control	23	28.0	59	72.0		19	23.2	63	76.8	

FET: Fisher exact test, non-significant (p>0.05), **: statistically highly significant (p<0.01).

Table (6): Relation between OAB-dry and OAB-wet of the studied pregnant women in the intervention group and gestational age throughout the study phases (n= 82)

Gestational Age		Pre				χ 2 (p-value)	Post				χ 2 (p-value)
		OAB-Dry (25)		OAB-Wet (57)			OAB-Dry (70)		OAB-Wet (12)		
		No	%	No	%		No	%	No	%	
Gestational age	Early	0	0.0	7	12.3	3.469 (0 .176)	7	10.0	0	0.0	10.386 (0.001**)
	Middle	11	44.0	24	42.1		34	48.6	1	8.3	
	Late	14	56.0	26	45.6		29	41.4	11	91.7	

χ 2 : Chi square test, non-significant(p>0.05), **: statistically highly significant (p<0.01).

Table (7): Statistical comparison between intervention and control groups regarding total mean score of their OAB bother and OAB-specific QoL throughout the study phases (n=164)

Items	Time	Intervention group (n=82)	Control group (n=82)	t-test	(p-value)
		Mean ±SD	Mean ±SD		
OAB bother	Pre	64.26±8.21	64.31±8.43	0.031	0.975
	Post	32.76±7.19	65.12±8.82	25.722	0.001**
OAB-specific QoL	Pre	30.5±5.2	29.2±5.14	1.6100	0.1093
	Post	78.23±5.14	30.60±4.59	-62.575	0.001**

Statistically non-significant (p>0.05), **: statistically highly significant (p<0.01).

Table (8): Distribution of mean scores of healthy lifestyle behavior (HLBS-II) among the studied pregnant women throughout the study phases (n=164)

Subscales	Time	Intervention group (n=82)	Control group (n=82)	t-test	(p-value)
		Mean ±SD	Mean ±SD		
Health responsibility	Pre	12.46±1.84	12.10±1.91	-1.207	0.229
	Post	18.61±2.12	12.37±1.9	-19.580	0.001**
Physical activity	Pre	11.13±1.88	10.81±1.64	-1.149	0.252
	Post	19.25±3.13	11.67±2.15	-18.044	0.001**
Nutrition	Pre	15.36±1.29	15.5±1.22	0.867	0.387
	Post	22.80±3.68	15.71±1.31	-16.428	0.001**
Spiritual development	Pre	11.24±1.74	10.92±1.63	-1.201	0.231
	Post	20.40±4.00	11.07±1.61	-19.558	0.001**
Interpersonal relationship	Pre	11.53±1.97	11.12±1.65	-1.461	0.146
	Post	20.06±4.29	11.29±1.66	-17.222	0.001**
Stress management	Pre	12.82±1.13	12.76±0.98	-.368	0.713
	Post	20.29±4.54	13.04±1.05	-14.069	0.001**
Total HLBS-II	Pre	74.5± 4.75	73.28± 3.92	-1.898	0.059
	Post	121.43±9.04	75.17±4.42	-41.596	0.001**

Statistically non-significant (p>0.05), **: statistically highly significant (p<0.01).

Table (9): Correlation matrix between study variables throughout the study phases

Pre	knowledge	OABSS	OAB bother	OAB-specific QoL	Post	knowledge	OABSS	OAB bother	OAB-specific QoL
Knowledge (r)					**Knowledg (r)**				
OABSS(r)	-0.179*				**OABSS**	-0.483**			
OAB bother(r)	0.025	0.111			**OAB bother(r)**	-0.686**	0.586**		
OAB-specific QoL(r)	\0.068	0.029	-.107-		**OAB-specific QoL(r)**	0.721 **	-0.670**	-0.886**	
Healthy Lifestyle Behavior(r)	0.056	0.040	0.034	0.058	**Healthy Lifestyle Behavior (r)**	0.694**	-0.665**	-0.864**	0.941**

Non-significant (p>0.05) **: statistically highly significant (p<0.01), r: correlation coefficient

Table (10): Step wise multiple linear regression for predicting factors which affect total QoL score of the pregnant women post intervention

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)	57.430	8.949		6.418	.000	39.755	75.104
Healthy Lifestyle Behavior	0.415	.034	0.635	12.184	.001**	0.348	0.482
Bother score	-0.720	.138	-0.247	-5.218	.001**	-0.992	-0.447
knowledge	0.128	.051	0.083	2.504	.013*	0.027	0.229
OABSS	-.519	.239	-.067	-2.173	.031*	-0.990	-0.047
Education	.840	.395	.050	2.130	.035*	0.061	1.620

*: statistically significant (p<0.05). **: statistically highly significant (p<0.01). R-square=0.916, ANOVA: F= 344.592. , P<0.001
Variables entered and excluded: age, residence, occupation, family income level, BMI, gravida, parity, gestational age and mode of last delivery.

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